

20. Add:



$$1 \quad \frac{3}{9} \quad + \quad 1 \quad \frac{5}{9} \quad =$$

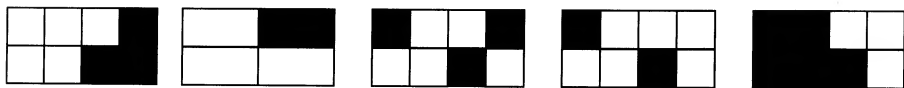
$$1\frac{1}{3} + 3\frac{5}{6} = \underline{\hspace{2cm}}$$

$$5\frac{3}{10} + 4\frac{1}{10} + 5\frac{1}{10} = \underline{\hspace{2cm}}$$

$$1\frac{1}{9} + 5\frac{2}{9} + 2\frac{3}{9} = \underline{\hspace{2cm}}$$

Addition of fractions with different denominators

In adding fractions with different denominator we need to make the fractions equivalent, as show in the example below:



$$\frac{3}{8} + \frac{1}{4} = \frac{3}{8} + \frac{2}{8} = \frac{5}{8}$$

Least Common Multiple (LCM)

To find the common denominator, we find the factors of the different denominators and we multiply them to find the number that is divisible by all the denominators.

The common denominator is divided by each of the denominators and multiplied by the numerators to make the fractions equivalent before adding them

Example:

$$\frac{1}{3} + \frac{1}{4} + \frac{4}{12} =$$

	3	4	12
2	3	2	6
2	3	1	3
3	1	1	1

The LCM = $2 \times 2 \times 3 = 12$

$$\frac{1}{3} + \frac{1}{4} + \frac{4}{12} = \frac{4+3+4}{12} = \frac{11}{12}$$

21. Add the following fractions after you find the common denominator.

$$2/3 + 1/6 =$$

$$1\ 2/9 + 1\ 1/3 =$$

$$2\ 3/12 + 2/4 =$$

22. Solve the following problems

Hamida drank $\frac{2}{5}$ liter of cola on Thursday,
 $\frac{3}{4}$ liter on Friday and
 $\frac{3}{5}$ liter on Sunday.

How much cola did she drink all together? Write the answer in mixed fractions.

Two tables, one is $\frac{7}{10}$ meter long and
the other is $1\frac{1}{10}$ meter long. What is the length of two tables put together.

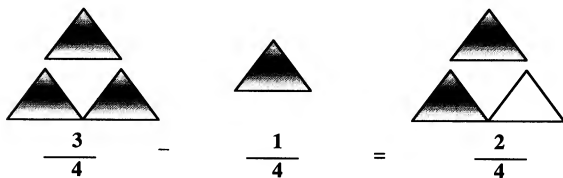
Subtraction of Fractions

Subtraction of fractions with the same denominators:

When the denominators are the same, we subtract only the numerators. The denominator remains the same.

Example:

Remember how to subtract the fraction:



23. Subtract:



$$\frac{5}{6} - \frac{2}{6} = \underline{\quad}$$

$$\frac{9}{10} - \frac{6}{10} = \underline{\quad}$$

$$\frac{11}{12} - \frac{5}{12} = \underline{\quad}$$

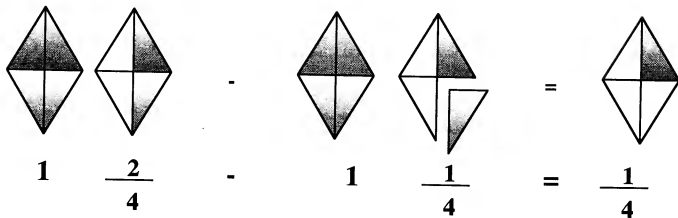
$$\frac{12}{15} - \frac{4}{15} = \underline{\quad}$$

$$\frac{17}{18} - \frac{10}{18} = \underline{\quad}$$

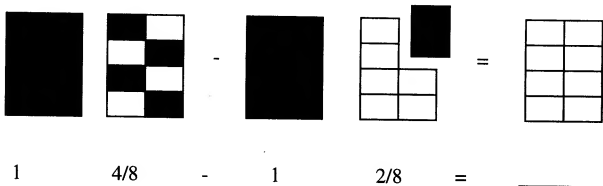
Subtraction of Mixed numbers with equal denominators

**In subtracting mixed fractions, we subtract the whole number first:
Then we subtract the fractions:**

Example:



24. Subtract the following mixed numbers and color the figure according to the answer:



25. Subtract the following mixed numbers:

$$4 \frac{4}{10} - 2 \frac{6}{10} =$$

$$8 \frac{7}{8} - 6 \frac{5}{8} =$$

$$6 \frac{7}{9} - 3 \frac{4}{9} =$$

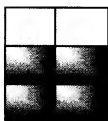
Subtraction of fractions with different denominators:

When we subtract fractions with different denominators, we change the denominators to a common denominator, then we subtract.



$$\frac{3}{4} - \frac{2}{8} = \frac{6}{8} - \frac{2}{8} = \frac{4}{8}$$

26. Subtract the following fractions with different denominators, and color the figure according to the answer:



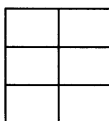
4/6

-



2/3

=



27. Subtract the following fractions with different denominators:

$$2/5 - 1/10 =$$

$$5/6 - 2/3 =$$

Mixed numbers with different denominators:

When we subtract mixed numbers, we subtract whole numbers first, then we find a common denominator for the fractions:

Example:

$$4\frac{3}{4} - 2\frac{5}{8}$$

$$4 - 2 = 2$$

$$\frac{3}{4} - \frac{5}{8} = \frac{6}{8} - \frac{5}{8} = \frac{1}{8}$$

The answer is $2\frac{1}{8}$

28. Subtract

$$3\frac{5}{9} - 1\frac{1}{3}$$

$$4\frac{1}{2} - 4\frac{1}{8}$$

$$5\frac{6}{12} - 2\frac{9}{12}$$

Subtraction of mixed numbers with borrowing from whole numbers:

First we find the common denominator.

If the first fraction is smaller than the second fraction

Borrow one more number and change it to fraction

Add this to the other fraction

Then we subtract the whole numbers

Example:

$$3 \frac{1}{3} - 1 \frac{3}{4}$$
$$\frac{1}{3} - \frac{3}{4} = \frac{4}{12} - \frac{9}{12}$$
$$\overset{2}{\cancel{3}} \longrightarrow 1 = \frac{12}{12}$$

$$\frac{12}{12} + \frac{4}{12} = \frac{16}{12}$$
$$\frac{16}{12} - \frac{9}{12} = \frac{7}{12}$$

$$2 - 1 = 1$$

The answer is $1 \frac{7}{12}$

29. Subtract

$$2 \frac{1}{4} - 1 \frac{2}{3}$$

$$5 \frac{2}{5} - 1 \frac{7}{10}$$

$$3 \frac{3}{8} - 1 \frac{3}{4}$$

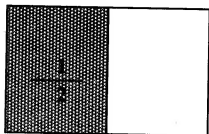
30. Word Problem:

Raihana cut $3 \frac{3}{8}$ meters of pink silk of a roll of cloth which was $10 \frac{3}{8}$ m long.
How many meters of the cloth are left?

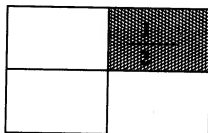
Multiplication of simple fractions

In multiplying fractions, we multiply the numerators by numerator and the denominators by the denominators.

Example:



$$\frac{1}{2}$$



$$\frac{1}{2} \text{ of } \frac{1}{2}$$

The answer is:

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{2}$$

31. Multiply the following fractions:

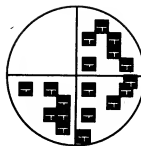
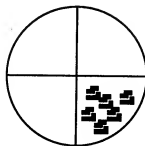
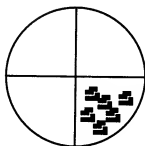
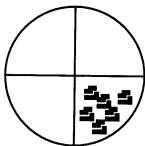
$$4/6 \times 3/2$$

$$5/12 \times 8/9$$

Multiplication of Fractions

We can replace repative addition by multiplication as show below

Example:



$$\frac{1}{4}$$

+

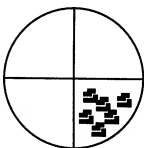
$$\frac{1}{4}$$

+

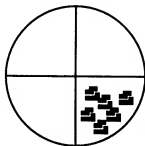
$$\frac{1}{4}$$

$$= \frac{1+1+1}{4} = \frac{3}{4}$$

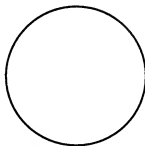
32. Complete the following



*



=



Multiplication of Fractions and whole numbers:

Example:

$$\frac{1}{4} \times 3 = \frac{1}{4} \times \frac{3}{1} = \frac{3}{4}$$

33. Multiply:

$$1/5 \times 3$$

$$3/7 \times 2$$

Class Five Math

Place Value up to 8-10 digits

The student will be able to:

- Write the following numbers in the table below and read them.

2,800,991

34,682,159

238,938,213

730,294,923,189

Billions			Millions			Thousands			Ones		
100 Billions	10 Billions	Billions	100 Millions	10 Millions	Millions	100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones

- Write the number to represent the circled numerals:

2,1(3)7,659

3,478,2(3)

190,75(3)418

(3)147,008,603

- Arrange these numbers in **ascending** order:

20,143,708

14,316,895

524,179,610

612,453,798

- Arrange in **descending** order:

649,124,393

1,265,065,002

13,237,173,411

- Write in standard form:

500,000,000+80,000+30,000+70+2

800,000+70,000+400+60+8

400,000+30,000+70+8

90,000+10+7

Multiplication of mixed fractions

In multiplying mixed fractions:

Change the mixed fractions to improper fractions

Then reduce the fractions by dividing the numerators and denominators by the same number, and

Multiply the numerators and denominators.

Example

$$4\frac{2}{5} \times 3\frac{3}{4}$$

$$\frac{22}{5} \times \frac{15}{4}$$

$$\begin{array}{r} 11 \\ \cancel{22} \\ \cancel{5} \end{array} \times \begin{array}{r} 3 \\ \cancel{15} \\ \cancel{4} \end{array} = \frac{33}{2} = 16\frac{1}{2}$$

1 2

The answer is $= 16\frac{1}{2}$

34. Multiply the following mixed fractions:

$$3\frac{1}{5} \times \frac{5}{8}$$

$$\frac{3}{7} \times 5\frac{4}{6}$$

$$4\frac{1}{4} \times 2\frac{1}{9}$$

35. Word Problems

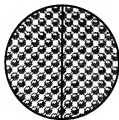
The price of one Kg of wheat is 12 Afs.

What is the price of $21\frac{1}{2}$ Kg of wheat? _____

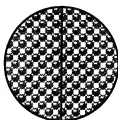
Division Fractions:

Division Whole Numbers by Fractions

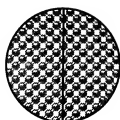
Example:



$$\frac{1}{2} \quad \frac{1}{2}$$




$$\frac{1}{2} \quad \frac{1}{2}$$



$$\frac{1}{2} \quad \frac{1}{2}$$

How many $\frac{1}{2}$ s are in 3 = 6

$$3 \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \frac{6}{1} = 6$$


Inverse

36. Find the quotient

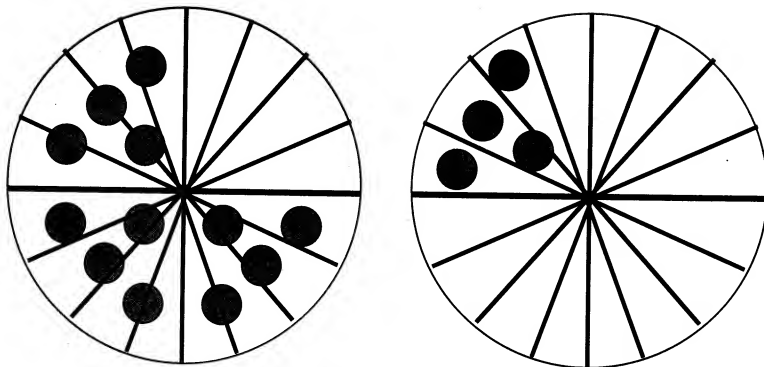
$$10 \div \frac{1}{2}$$

$$81 \div \frac{1}{9}$$

$$250 \div \frac{1}{25}$$

Dividing fractions by whole numbers

Example



$$\frac{3}{4} \div 4 = \frac{3}{4} \times \frac{1}{4} = \frac{3}{16}$$

↖ ↗
Inverse

37. Find the quotient

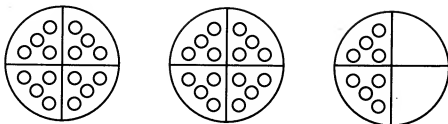
$$5 \div 8/3$$

$$2/9 \div 4$$

$$5/9 \div 9$$

Dividing mixed fractions

Example



How many $\frac{1}{4}$ s are in $2\frac{1}{2} = 10$

$$2\frac{1}{2} \div \frac{1}{4} = \frac{5}{2} \times \frac{4}{1} = \frac{20}{2} = 10$$

38. Find the quotient:

$$9\frac{1}{2} \div 3 =$$

$$4\frac{9}{1} \div 2\frac{1}{2} =$$

$$6\frac{4}{7} \div 2\frac{1}{4} =$$

39. Word problems

A pile of math textbooks on Mr Hassan's table is exactly $14\frac{2}{5}$ cm.

If each book is $1\frac{2}{5}$ cm thick.

How many books make the pile?

Ahmad has 36 chocolate bars. He gave $\frac{4}{9}$ of them to his friend Karim.
Then he shared the rest among himself and his other 4 friends.

How many chocolate bars does he get?

Decimal fractions

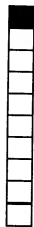
A fraction with a denominators of 10, 100, 1000 can also be written as a decimal fraction:

$$\frac{1}{10} = 0.1$$

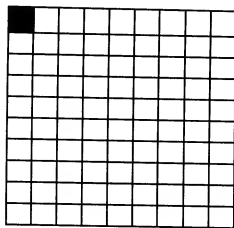
$$\frac{1}{100} = 0.01$$

$$\frac{1}{1000} = 0.001$$

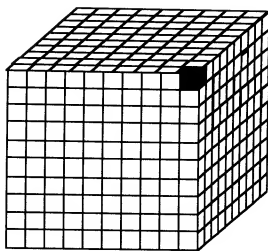
Example



$$\frac{1}{10}$$



$$\frac{1}{100}$$



$$\frac{1}{1000}$$

40. Write these fractions as decimal fractions

$$2/10$$

$$6/100$$

$$70/100$$

$$18/1000$$

$$190/1000$$

Decimal fractions Place Value Table

Thousands	Hundreds	Tens	Units	Decimal Point	Tenths	Hundredths	Thousandths
	4	2	1	•	5		
		6	1	•	0	5	
		7	1	•	0	0	5

41. Write the following decimal fractions in the decimal fractions place value table:

3.5

101.35

35.101

1000.114

114.1000

93.009

Example:

Place the following digits in the place value table and write the decimal fractions:

1 in the unit place

3 in the tenths place

8 in the hundredths place

the decimal fraction is 1.38

42. Place the following digits in the place value table and write the decimal fractions:

9 in the unit place

0 in the tenths place

4 in the hundredths place

6 in the thousandths place

Example

Identify the value of the circled digit:

9 3.0 6 1

The answer is: 1 is in the thousandths place value

43. Identify the value of the circled digits:

1 4.0 3 2 _____

2 5. 3 27 _____

6 4 5. 2 2 3 _____

Changing Common Fractions to Decimal Fractions

To change common fractions to decimal fractions, we divide the numerator by the denominator:

Example:

$$\frac{4}{5} = 0.8$$

44. Change the common fractions below to decimal fractions:

$$3/5$$

$$15/50$$

$$125/500$$

Changing Mixed Fractions to Decimal Fractions

To change mixed fractions to decimal fractions, we keep the whole numbers on the left and the decimal fractions on the right.

Example:

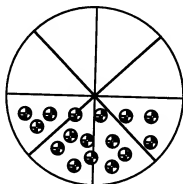
$$1 \frac{1}{1000} = 1.003$$

$$2 \frac{3}{4} = 2.75$$

Changing Decimal fractions to Common Fractions

To change decimal fractions to common fractions, we write numbers in the tenths place with the denominator of 10, in the hundredths place with a denominator of 100 and in the thousandths place with a denominator of 1000.

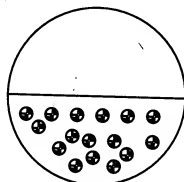
Example:



0.5

=

$$\frac{5}{10} = \frac{1}{2}$$



$$\frac{1}{2}$$

45. Change the following decimal fractions to common fractions:

0.25

1.5

4.175

Comparing Decimal Fractions

Example:

0.3

>

0.03

2.4

<

3.3

0.25

=

0.2500

46. Compare the following decimal fractions using >, <, =

0.2

0.02

0.27

0.72

0.5

0.5000

Addition of Decimal fractions

In adding decimal fractions, the decimal points are placed under each other:

Example

$$0.3 + 0.7$$

Units	Decimal Points	Tenths
0	•	3
+ 0	•	7
1	•	0

47. Add the following decimal fraction

Units	Decimal Points	Tenths
0	•	9
+ 0	•	6

Units	Decimal Points	Tenths
0	•	8
+ 0	•	5

Units	Decimal Points	Tenths
2	•	8
+ 7	•	4
1	•	0

Units	Decimal Points	Tenths	Hunderdths
4	•	7	1
3	•	6	7

48. Word Problem

Seddiq spent 0.25 of his money for buying clothing,
and 0.5 of his money on buying sweets for Eid.

How many parts of his money has he spent? _____

6. Write in expanded form:

39,405,276

61,824,132

135,400,761

479,806,432

7. Write $<$, $>$, $=$ in the box

743621102

758,925,106

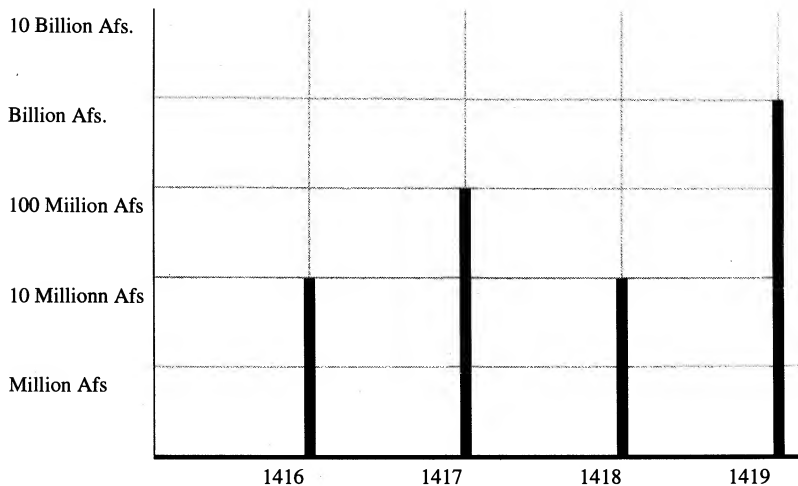
16,878,783

16,783,403

3,976,999

39,882,111

8. The following graph indicates the income of Afghanistan generated from exports over a period of four years



Estimate the income generated during 1416 and 1419

Calculate the difference between these two years.

Subtracting Decimal Fractions:

In subtracting decimal fractions, the decimal points are placed under each other.

Example

$$5.4 - 3.7$$

Units	Decimal Points	Tenths
4 5		
- 3	•	14
1	•	7

49. Subtract these decimal fractions:

Units	Decimal Points	Tenths	Hundredths
4	•	7	4
- 3	•	5	2

Tens	Units	Decimal Points	Tenths	Hundredths	Thousandths
7	8	•	4	4	5
- 6	4	•	2	5	4

50. Word Problem

Ahmad had 12.5m of cloth.

He gave his sister 2.75m.

How many meters are left?

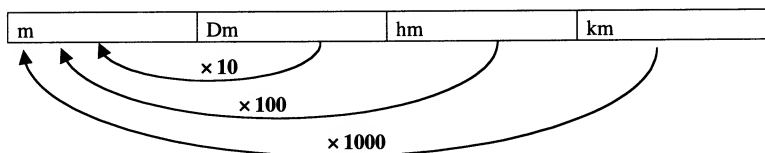
Measurement

Units of Measurement

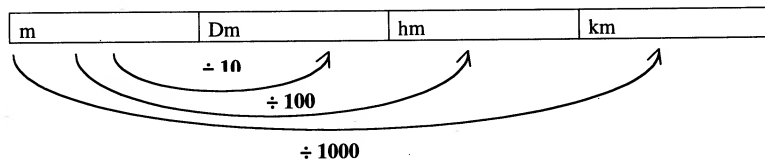
Meter is a unit used to measure length. It has multiple and parts.

Multiple and Parts of Meter

To change large units of measurement to smaller units of measurement, we multiply by 10, 100, and 1000 as indicated in the diagram.



To change small units of measurement to large units of measurement, we divide by 10, 100, and 1000 as indicated in the diagram.



Fill in the blanks in the table below:

M	dm	hm	km
			20
		500	
	260		
10,000			
			10
2500			

51. Word Problems:

Ahmad's house is 3 Km away from the Pule Khishti Mosque.

How many **meters** does he walk when he goes to pray on Friday both ways, going and coming back?

The perimeter of a football playground is 5000 m.

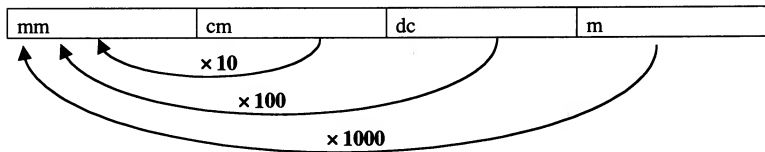
What is the distance around the field in **Hm**?

The distance between Fatima's house and her school is 500m.

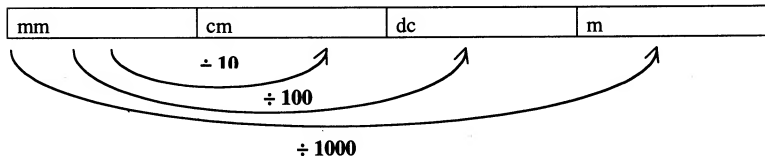
What is the distance between Fatima's house and her school in **dm**?

Parts of a Meter

To change large units of measurement to smaller units of measurement, we multiply by 10, 100, and 1000 as indicated in the diagram.



To change small units of measurement to large units of measurement, we divide by 10, 100, and 1000 as indicated in the diagram.



52. Fill in the blanks in the following table:

m	dm	cm	Mm
10			
			40,000
	50		
		1500	
40			
			500,000

53. Word Problems:

The length of the classroom is 8m.

What is the length of that classroom in cm?

The door of the classroom is 2000mm high.

What is its height in meters?

Khalid's ruler is 30cm.

What is the length of the ruler in dm?

Calendar

AD Calendar

AD stands for **Anna Domino** that means after birth of Jesus.

There are 12 months in a year.

There are 52 weeks in a year, and each week has seven days.

The days of the week are Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday.

There are 10 years in a decade;

There are 100 years in one century.

The year is 1999

The months of the year are indicated in the table below:

Months	Days
January	31
February	28
March	31
April	30
May	31
June	30
July	31
August	31
September	30
October	31
November	30
December	31

54. Answer these questions:

After how many years are there 29 days in the month February?

How many days are there in a year, if February has 28 days?

After how many months will it be the year 2000?

Study the calendar below and note that Eid of Ramadhan-ul-Mubarak falls on January 18, 19 and 20.

**Ramadhan
Shawal
1419**

**January
1999**

**Juddi
Dalw
1377**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
				14 1 11	15 2 12	16 3 13
17 4 14	18 5 15	19 6 16	20 7 17	21 8 18	22 9 19	23 10 20
24 11 21	25 12 22	26 13 23	27 14 24	28 15 25	29 16 26	30 17 27
1 18 28	2 19 29	3 20 30	4 21 1	5 22 2	6 23 3	7 24 4
8 25 5	9 26 6	10 27 7	11 28 8	12 29 9	13 30 10	14 31 11

18, 19 and 20 of January are Eid Ramadhan-ul-Mubarak

55. Answer the following question

14 of Ramadhan 1419 correspond to _____ January 1999.

29 of Juddi (Capricorn) 1377 correspond to _____ January 1999.

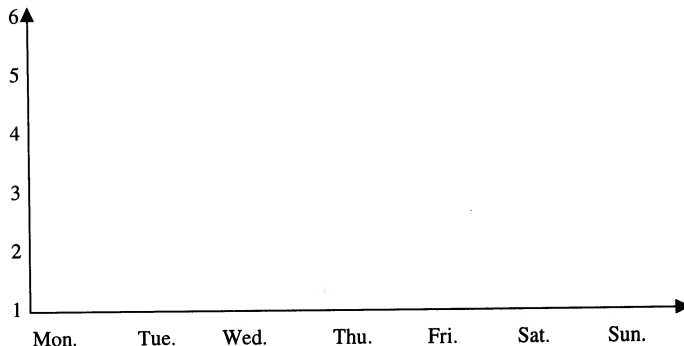
Eid days of Ramadhan-ul-Mubarak correspond to ____, ____, ____ of January 1999.

How many days are there in January? _____

Which month of the AD calendar is January? _____

What are the dates of Eid days in January? _____

How many Mondays, Tuesdays, Wednesdays, Thursday s, Fridays and Sunday s are in January. Draw in the graph given below:

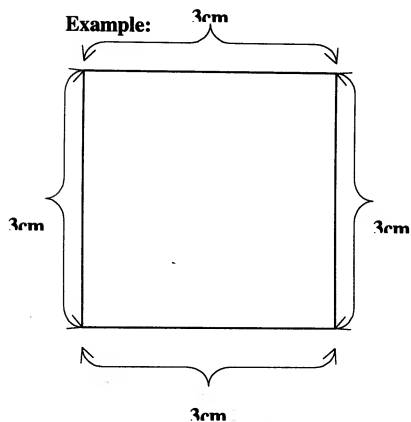


Geometry

Perimeters of Squares, Rectangles, Triangles and Circles

The distance around a figure is called the perimeter of the figure.

The Perimeter of a Square

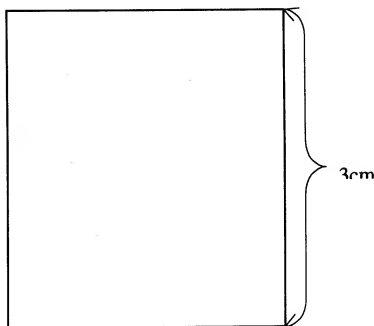
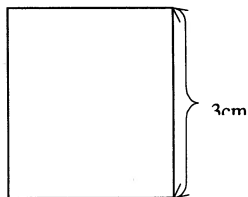


The perimeter of the square is:

$$3\text{cm} + 3\text{cm} + 3\text{cm} + 3\text{cm} = 12\text{cm}$$

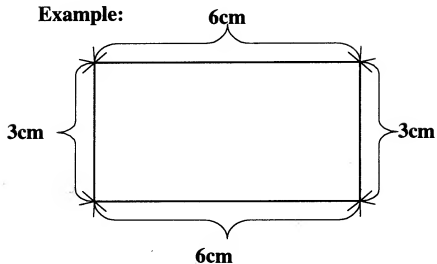
$$3\text{cm} \times 4 = 12\text{cm}$$

56. Find the perimeter of the following square:



The Perimeter of a Rectangle

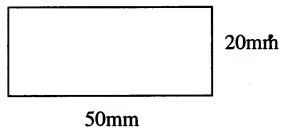
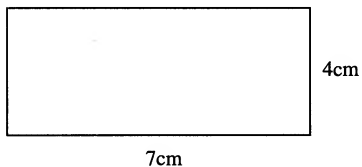
Example:



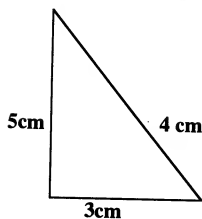
The perimeter of rectangle is:
 $3\text{cm} + 6\text{cm} + 3\text{cm} + 6\text{cm} = 18\text{cm}$

or $(3\text{cm} + 6\text{cm}) \times 2 = 9 \times 2 = 18\text{cm}$

57. Find the perimeter of these rectangles:



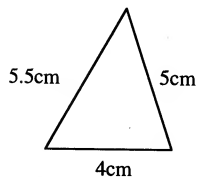
The Perimeter a Triangle

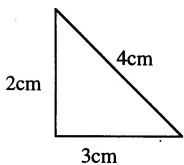


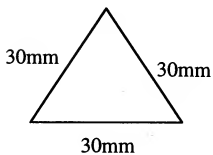
The perimeter of the Triangle is :

$$5\text{cm} + 4\text{cm} + 3\text{cm} = 12\text{cm}$$

58. Find the perimeters of these triangles:

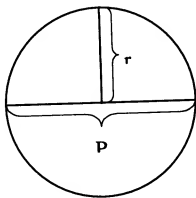






The Perimeter of a Circles

The perimeter of a circle is the distance around the circle.

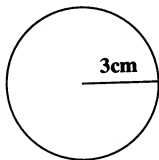


R = radius of the circle is the distance from the center to the circumference of the circle.

D = diameter of the circle is the distance across the circle through the center.

π is constant number = $\frac{22}{7} = 3\frac{1}{7}$.
 π is used in calculating the perimeter and area of a circle.

Example:



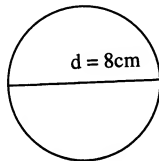
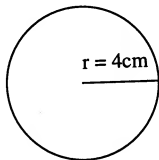
The perimeter of the circle is:

$D \times \pi$ or

$2 \times r \times \pi$

$$2 \times 3 = 6 \times \frac{22}{7} = \frac{132}{7} = 18\frac{6}{7}$$

59. Find the perimeters of these circles:



9. Multiply the following:

$$864$$

$$\times 9$$

$$4325$$

$$\times 87$$

$$9388$$

$$\times 654$$

10. Divide the following:

$$150 \div 9 =$$

$$49608 \div 68 =$$

The Areas of Squares, Rectangles, Triangles and Circles

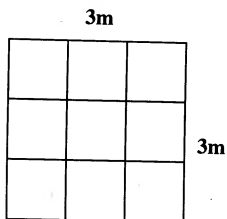
The Area of a Square

The area of a square is the number of squares inside the square.

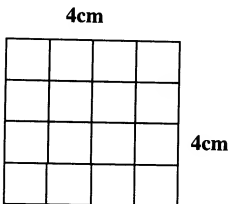
To find the area of a square, we multiply side by side.

The area of figure is expressed in square units.

Example:

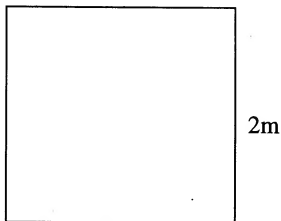
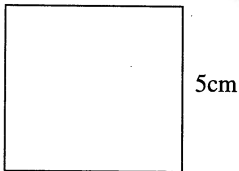


$$9\text{m}^2$$



$$16\text{cm}^2$$

60. Find the areas of the following squares:



61. Word Problems:

Ahmad's garden is square in shape.

One side of his garden is 10 meters.

What is the area of the garden in square meters?

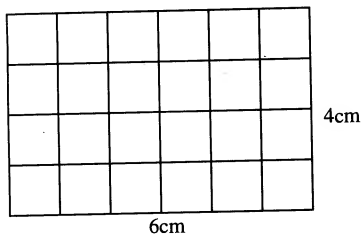
Hameeda's handkerchief is square in shape.

The perimeter of her handkerchief is 80cm.

What is its area of the handkerchief in square cm?

The Area of a Rectangle

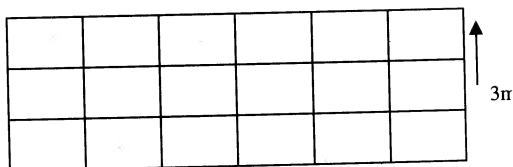
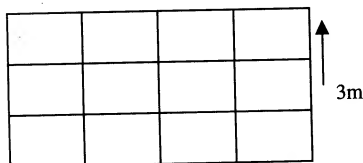
To find the area of a rectangle we multiply the width by the length
The area of figure is expressed in square units.



$$\text{Area} = \text{length} \times \text{width}$$

$$\text{Area} = 6\text{cm} \times 4\text{cm} = 24\text{cm}^2$$

62. Find the areas of these rectangles:



63. Word Problems:

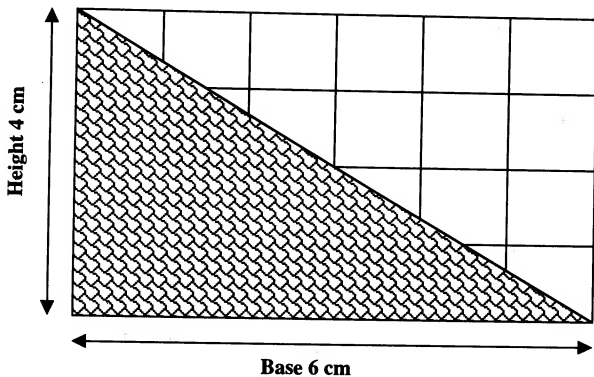
Karim wants to buy a carpet for his room.

The width of the room is $3\frac{1}{3}$ m, and the length is $4\frac{1}{3}$ m.

What is the area of the carpet needed for his room in square meters?

The Area of a Triangle

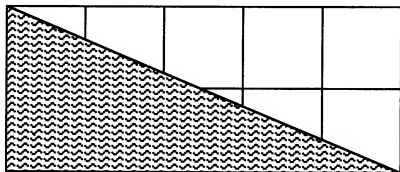
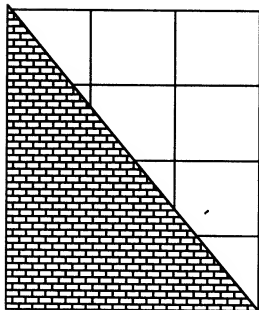
To find the area of a triangle, first find the area of a rectangle with the same base and height and then divide by two.



The Area of triangle = $\frac{\text{base} \times \text{height}}{2}$

$$\text{The Area of the triangle} = \frac{6\text{cm} \times 4\text{cm}}{2} = \frac{24}{2} = 12\text{cm}^2$$

64. Count the width and the length of the rectangles and find the area of the triangles.





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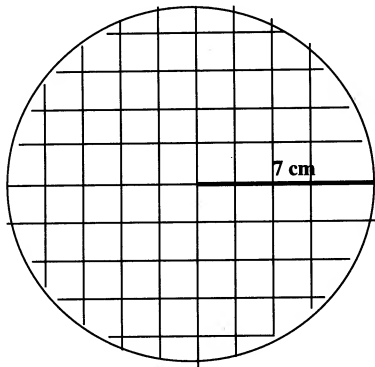
**Supported and coordinated by UNICEF and
Save the Children (USA)**

The Area of a Circle

The area of a circle is the number of squares inside the circle.

To find the area of the circle we multiply radius \times radius $\times \pi$

Example:



The area of the circle = radius \times radius $\times \pi$

The area of the above circle is $7 \times 7 \times \frac{22}{7} = 154 \text{ cm}^2$

65. Word Problems:

The students of Said Jamaluddin High School want to cultivate a circular flower bed in the school play ground.

The radius of a circle is 5 m.

Find the area of the flowerbed in square meters.

The swimming pool of intercontinental hotel is circular in shape.

The diameter is 9m.

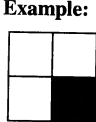
Find the area of the pool in square cm.

Fractions

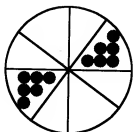
Proper Fraction

Fractions with the smaller numerator than the denominator are called proper fractions.

Example:



$$\frac{1}{4}$$



$$\frac{2}{8}$$



$$\frac{5}{8}$$



$$\frac{3}{8}$$



$$\frac{2}{5}$$

11. Identify and circle the proper fractions

$$13/3$$

$$1/8$$

$$2/7$$

$$22/8$$

Improper Fractions

Fractions with bigger numerator than denominator are called improper fraction.



$$1 = \frac{8}{8}$$



$$\frac{3}{8} = \frac{11}{8}$$

Changing improper fraction to mixed fraction

In changing improper fraction to mixed fraction, we divide the numerator by denominator.

Example:

$$\frac{25}{3} = 8\frac{1}{3}$$

12. Change the following improper fractions to mixed fractions

$$52/9,$$

$$32/5,$$

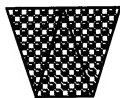
$$120/6$$

Changing mixed fractions to improper fractions

In changing mixed fractions to improper fraction, we multiply the whole number by denominator and add the numerator.

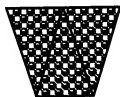
Example:

$$1\frac{2}{3}$$



Fractions with equal numerator and denominator is equal to one whole number

$$1 = \frac{3}{3}$$



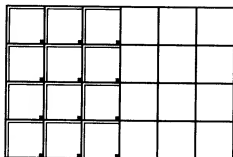
$$\frac{3}{3}$$

+

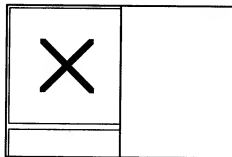
$$\frac{2}{3} = \frac{5}{3}$$

Equivalent Fractions

The shaded figures are equal. The first figure has 12 of 24 parts and the second figure has one of 2 parts.



$$\frac{12}{24}$$



$$\frac{1}{2}$$

We reduce fractions by dividing numerators and denominators by the same number

$$\frac{\cancel{12}^{\div 12}}{\cancel{24}_{\div 12}} = \frac{1}{2}$$

13. Reduce the following fractions by dividing the numerator and denominator by the same number

$$16/24$$

$$72/81$$

$$12/60$$

14. Fill in the missing numerator and denominator in the fractions below

$$1/2 = 2/$$

$$11/13 = 22/$$

$$4/7 = /35$$

15. Reduce these fractions and compare with >, < and =

$$4/16 \quad \square \quad 5/20$$

$$72/81 \quad \square \quad 4/36$$

$$25/55 \quad \square \quad 30/66$$

Least Common Multiple (LCM)

The least common multiple of many numbers is the largest number that is divisible by all.

Example:

Find the LCM of 8, 4, 12, 24, 36

	8	4	12	24	36
2	4	2	6	12	18
2	2	1	3	6	9
2	1	1	3	3	9
3	1	1	1	1	3
3	1	1	1	1	1

LCM is $2 \times 2 \times 2 \times 3 \times 3 = 72$

16. Follow the example and find the LCM for each set of numbers

42 and 35

12 and 60

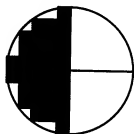
9, 18, 12, 7

4, 6, 8, 10

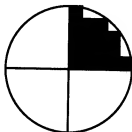
Addition of Fraction

Addition of fractions of like denominators

When the denominators are the same we add the numerators only. As shown in the example.



$$\frac{2}{4}$$



$$\frac{1}{4}$$



$$\frac{3}{4}$$

17. Add and color the figure according to the answer:



$$\frac{2}{6}$$

+



$$\frac{3}{6}$$

=



?

18. Add the following fractions:

$$\frac{2}{11} + \frac{9}{11} =$$

$$\frac{5}{9} + \frac{3}{9} =$$

$$\frac{4}{12} + \frac{6}{12} =$$

$$\frac{8}{15} + \frac{1}{5} + \frac{3}{15} =$$

Improper Fractions

When the answer has a numerator that is bigger than the denominator, we divide the numerator by the denominator to get a mixed fraction.

Example:

$$4/9 + 7/9 = 11/9 = 1\frac{2}{9}$$

19. Add the fractions below and write the answer as mixed number.

$$3/4 + 2/4 =$$

$$8/15 + 9/15 =$$

$$3/8 + 5/8 + 9/8 =$$

Addition of mixed fractions

In adding mixed fractions, we add the like fractions first.

$$\frac{1}{6} + \frac{4}{6} = \frac{5}{6}$$

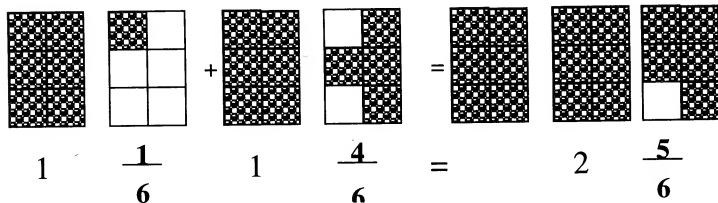
Then we add the whole number

$$1 + 1 = 2$$

Then we write the whole number and the fraction together.

$$2\frac{5}{6}$$

Example:



**Basic Competencies of
Learning in**

Mathematics



Grade Five

In the name of God, the gracious, the merciful

Introduction:

This booklet is one of a series of teacher resource books on Dari, Pashto and mathematics. These were developed in 1999 by a group of experienced Afghan educators to help teachers understand the universal basic competencies that primary education programs need to teach. The materials were developed based on various resource materials. In particular, they draw on existing Afghan primary textbooks.

The mathematics booklets are organized as follows:

- There are six booklets, one for each grade (1-6).
- Each booklet contains a full mathematics concept and skills framework for the full primary level. This framework can help teachers in different ways:
 - It helps teachers to understand how different math concepts are broken down into skills for each class level;
 - It helps teachers to understand how the different math concepts and skills need to be built up sequentially through the primary cycle;
 - It shows at which grade level new concepts and skills should be introduced.
- Each grade booklet then provides examples of all the math skills that need to be covered in the specific grade. The examples can help teachers as follows:
 - It ensures that all teachers understand the skills in the same way;
 - Teachers can use the examples to test whether children have learnt the skills;
 - Teachers can use the examples to develop extra practice material for children.

Not only teachers can use the materials. Teacher trainers can use the materials as well, for example to introduce the basic competencies, to teach subject content, and to help teachers develop low-cost teaching aids linked to the competencies. Supervisors can use the examples to test whether children are learning the basic competencies in mathematics. It is the hope of the developers that all Afghan educators will find the materials useful in their work with children.

Prepared by the representatives of the following organizations:

OI	Ockenden International
IRC	International Rescue Committee
AG-BASED	Afghan German Basic Education
SCA	Swedish Committee for Afghanistan
SAB	Solidarite Afghanistan Belgium
GTZ-BEFARE	GTZ-Basic Education for Afghan Refugees
AIL	Afghan Institute of Learning
CARE	Cooperative Assistance Relief Everywhere
PSD	Partners for Social Development
SCF-USA	Save the Children Federation -USA
CIC	Children in Crisis
NAC	Norwegian Afghanistan Committee
ECAR	Education Committee for Afghan Refugees
AMNA	Creation of the Pilot Schools in Afghanistan
HCI	Human Concern International
	Afghan Teachers and Schools Union in Quetta

Math Concepts	I	II	III	IV	V	VI
Place Value	Pre number Concepts Tens, 1 - 99	Hundreds 100-999	Thousands 1000- 100000	Millions 7 Digits Add. and Sub. Review of multiplication Table	Billions 8 - 13 digits Add. and Sub.	Trillion 10 - 13 digits Add and Sub.
Addition and Subtraction	Addition & Subtraction of 1 - 99 and zero without carrying and borrowing	Addition & Subtraction till 999 and zero with carrying/borrowing up to tens	Whole numbers w/o borrow & carry Repeated addition			
Multiplication and Division			Multiplication and division by 1 to 9 and zero	Multiplication & division by 10s, 100s, 1000s w/o decimals Multiply/Divide by 2, 3 and four digits Proper fractions Same denominator Compare Add Subtraction	Review multiplication and division Review multiplication and division	Review multiplication and division by 10s, 100s, 1000s with decimals
Fractions	Color 1/2 and 1/4 of figures	Matching fraction 1/2, 1/3, 2/3, 1/4, 2/4, 3/4 with figures	Identification of fraction (1/2, 1/3, 2/3, 1/4, 2/4, 3/4, 1/5, 2/5, 3/5, 4/5) with figures		Four operations on Fractions	Conversion of fractions to decimals and vice versa Compare
Decimals					Multiply/divide by 10s, 100s, 1000s with decimals Compare, add and subtract	Four operations on Decimals Application Ratio Percent
Measurement	Comparison of short and long, big and small and thick and thin	span, foot, steps compare capacity of containers Time; months, days and hours	m, cm, kg Hours and minutes	Multiples and parts km, hm, dm, m m, dm, cm, mm Conversion without decimals	Multiples and parts km, hm, dm, m m, dm, cm, mm Conversion with decimals	Review m, dm, cm, mm with perimeter m^2 , dm^2 , cm^2 , mm^2 with areas of circle, triangle, rectangle and square
Money/Calendar	Coins and bills up to 100 Afs.	50 Afs. 100Afs And 500 Afs.	Review of 50, 100, 500 1000, 5000, 10,000 Afs.	Lunar Calendar	AD Calendar	